



Spectral Gamma-Ray Borehole  
Log Data Report

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Borehole

40-00-02

Log Event A

### Borehole Information

Farm : <u>S</u>	Tank : <u>S</u>	Site Number : <u>299-W23-51</u>
N-Coord : <u>36,175</u>	W-Coord : <u>75,615</u>	TOC Elevation : <u>666.03</u>
Water Level, ft :	Date Drilled : <u>3/31/1992</u>	

### Casing Record

Type : <u>Steel-welded</u>	Thickness : <u>0.280</u>	ID, in. : <u>6</u>
Top Depth, ft. : <u>0</u>	Bottom Depth, ft. : <u>150</u>	

### Borehole Notes:

According to the drilling record, this borehole was perforated with five holes per foot from 40 to 100 ft, but was not grouted. The casing thickness is presumed to be 0.280 in., on the basis of the published thickness for schedule-40, 6-in. steel tubing. The top of the casing, which is the zero reference for the SGLS, is approximately flush with the tank farm grade.

### Equipment Information

Logging System : <u>2</u>	Detector Type : <u>HPGe</u>	Detector Efficiency: <u>35.0 %</u>
Calibration Date : <u>05/1996</u>	Calibration Reference : <u>GJPO-HAN-5</u>	Logging Procedure : <u>P-GJPO-1783</u>

### Log Run Information

Log Run Number : <u>1</u>	Log Run Date : <u>06/04/1996</u>	Logging Engineer: <u>Alan Pearson</u>
Start Depth, ft.: <u>137.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>60.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>

  

Log Run Number : <u>2</u>	Log Run Date : <u>06/05/1996</u>	Logging Engineer: <u>Alan Pearson</u>
Start Depth, ft.: <u>0.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>61.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>.5</u>

  

Log Run Number : <u>3</u>	Log Run Date : <u>06/05/1996</u>	Logging Engineer: <u>Alan Pearson</u>
Start Depth, ft.: <u>60.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>45.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>



Borehole

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Log Event A

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## Analysis Information

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Analyst : E. Larsen

Data Processing Reference : P-GJPO-1787

Analysis Date : 02/26/1997

### Analysis Notes :

This borehole was logged by the SGLS in three log runs. Two log runs were required to log the length of the borehole. A third log run was performed as an additional quality assurance check on a segment of one of the primary log runs.

The pre- and post-survey field verification spectra met the acceptance criteria established for the peak shape and detector efficiency, confirming that the SGLS was operating within specifications. The energy calibration and peak-shape calibration from these spectra were used to establish the channel-to-energy parameters used in processing the spectra acquired during the logging operation.

Casing correction factors for a 0.280-in.-thick steel casing were applied during analysis.

The man-made radionuclide Cs-137 was detected in this borehole. Measurable Cs-137 contamination was detected continuously from the ground surface to a depth of 3 ft. Scattered zones of continuous and intermittent Cs-137 contamination were also detected between 4 and 98.5 ft.

The K-40 concentrations gradually increase below about 50 ft. The U-235 concentrations progressively increase below about 120 ft. Generally increased Th-232 concentrations occur below about 125 ft but show a wide range of fluctuation.

Additional information and interpretations of log data are included in the main body of the Tank Summary Data Reports for tanks S-101 and S-104.

### Log Plot Notes:

Separate log plots show the man-made and the naturally occurring radionuclides. The natural radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate the concentrations.

A combination plot includes the man-made and natural radionuclides, the total gamma derived from the spectral data, and the Tank Farms gross gamma log. The gross gamma plot displays the latest available digital data. No attempt has been made to adjust the depths of the gross gamma logs to coincide with the SGLS data.

The interval between 45 and 60 ft was relogged as a quality assurance measure to establish the repeatability of the radionuclide concentration measurements. The radionuclide concentrations shown were calculated using the separate data sets provided by the original and rerun logging runs.

Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the MDL. The MDL of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.